

LPC: 1978090004-Will Co.
Mobil Oil Corporation
ILD: 064403199
SF/HRS

US EPA RECORDS CENTER REGION 5



483409

CERCLA

Site Inspection

Prioritization

Report



**Illinois Environmental
Protection Agency**

2200 Churchill Road
P. O. Box 19276
Springfield, IL 62794-9276

TABLE OF CONTENTS

SECTION	VOLUME 1	PAGE
1	Site Background.....	1.
	1.1 Introduction.....	1.
	1.2 Site Description.....	1.
	1.3 Site History.....	2.
	1.4 Regulatory Status.....	4.
2	SIP Activities.....	4.
	2.1 Reconnaissance Activities.....	4.
	2.2 Interviews.....	5.
	2.3 Sampling Activities	5.
3	Site Sources.....	6.
	3.1 Source Definition.....	6.
4	Migration Pathways	8.
	4.1 Groundwater Pathway.....	8.
	4.2 Surface Water Pathway.....	9.
	4.3 Soil Exposure Pathway.....	11.
	4.4 Air Pathway.....	12.
Figures	1. Site Location Map.....	13.
	2. Site Topography Map.....	14.
	3. Site Map.....	15.
	4. Detail Map of Surface Impoundments and Land Treatment Areas.....	16.
Tables	1. Sample Description.....	17.
	2. SIP Key Sample Summary.....	18.
Appendix	1. Analytical Data Qualifiers	
	2. Target Compound List	
	3. Ontario Sediment Guidelines	

SECTION I. SITE BACKGROUND

1.1 INTRODUCTION

This section includes information obtained over the course of the formal Site Investigation and previous Illinois Environmental Protection Agency activities involving this site. Previous CERCLA activities for this site consisted of an Preliminary Assessment in 1983 and Screening Site Investigation in 1985 by Ecology and Environment, Inc. for the United States Environmental Protection Agency (USEPA).

1.2 SITE DESCRIPTION

The site is located approximately nine miles southwest from Joliet, Illinois on the east side of the intersection of I-55 and Arsenal Road in Will County, Illinois. The Mobil Oil property occupies approximately 1200 acres. The legal description of the site includes portions of the South 1/2 of Section 15, portions of Section 27, portions of the Northwest Section 1/4 of Section 23, portions of Section 27, portions of the Northwest 1/4 Section 34, all in Township 34 North, Range 9 East of the Third Principal Meridian, Will County (Figure 1.).

The site is located in a rural area on the southern bank of the Des Plaines River. The site is in a sparsely populated region bordered on the north by the Des Plaines River, on the east by the Joliet Army Arsenal, to the south by an industry and a small airstrip and to the west by industry and the Des Plaines

Conservation Area. The topography is relatively flat, although the ground is a higher elevation in the center of the site, sloping north in the northern part of the site toward the Des Plaines River, sloping east in the eastern part of the property toward Jackson Creek (a tributary of the Des Plaines River), sloping south in the southern part of the site toward a wetlands drained by Grant Creek (a tributary of the Des Plaines River) which flows off the property directly onto the Des Plaines Wildlife Conservation Area (Figure 2.). The geology of the area within one mile of the site consists of 0-90 feet of silt, sand or gravel underlain by limestone or dolomite bedrock. Onsite the soil is predominantly a gray-black silt-loam. Bedrock consists of Silurian age limestone and dolomite. Throughout much of the property bedrock is 0-8 feet deep, outcropping in many areas. The shallow groundwater aquifer is made up of a combination of the unconsolidated deposits and the dolomite bedrock.

The site is currently owned by the Mobil Oil Company Joliet Refinery. The refinery facility itself is located on the northern part of the property along the Des Plaines River, occupying approximately 320 acres. The property south of the refinery is presently undeveloped, consisting of a combination of overgrown pasture and woodland.

1.3 SITE HISTORY

According to interviews with Mobil Oil personnel, the property presently owned by Mobil Oil Refinery was once primarily

agricultural land, although the small town of Drummond once existed in the east-central part of the property, and a quarry existed near the town's location. In the 1930's all of the property was purchased by the Federal Government for the Joliet Army Arsenal. The residents of Drummond were displaced. According to interviews with Mobil Oil personnel the Joliet Arsenal did not actually use the property and leased it to local farmers for cattle grazing. Mobil Oil Company purchased the property and the Mobil Oil Refinery began operations in 1973 and is currently active. The Mobil Oil Refinery near Joliet is a conventional fuels refinery which produces gasoline, heating oil, distillate and petroleum coke. The refinery was regulated as a Resource Conservation and Recovery Act (RCRA) treatment, storage and disposal facility and had solid waste operating permit from 1977-83. During that time Mobil conducted sludge farming operations and had seven unlined surface impoundments (Figure 4.). All but two of the impoundments have been filled. Analysis of sludge taken by Mobil Oil at the time of the sludge farming indicated that it contained elevated levels of chromium and lead. The CERCLA SSI stated that up to 68,000 tons of sludge were disposed of at the site. Some of the sludge stored in the impoundments before it was applied to the land treatment areas. The land treatment program consisted of five separate land treatment areas totaling approximately 53 acres. At the soil farms the sludge was tilled into the soil with the intent that the sludge would aerate and biodegrade.

1.4 REGULATORY STATUS

The Mobil Oil Refinery is currently listed as a small quantity generator under the Resource Conservation and Recovery Act (RCRA) and is therefore not subject to that programs corrective action authority. The outfalls from the site to the Des Plaines River are regulated under a National Pollutant Elimination System (NPDES) permit. Mobil Oil Refinery is permitted by the Illinois Environmental Protection Agency Division of Air Pollution Control. The facility is not subject to the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), Atomic Energy Act (AEA), or Uranium Mill Tailings Radiation Control Act (UMTRCA).

SECTION 2. SIP ACTIVITIES

2.1 RECONNAISSANCE ACTIVITIES

A review of the 1985 Ecology and Environment Site Inspection Report indicated that a more detailed inspection would be required in order to evaluate the site. A Reconnaissance Inspection was conducted on 16 February, 1995 by Mark Densmore from the Illinois Environmental Protection Agency (IEPA) Site Assessment Unit to make observations and determine sampling locations. Also present during the reconnaissance was William Simon, an Environmental Advisor for Mobil Oil Corporation. During the reconnaissance the surface impoundments and the landfarming areas were examined as well as surface water drainage paths and wetland areas.

2.2 REPRESENTATIVE INTERVIEWS

Prior to the CERCLA sampling event interviews were conducted between Mark Densmore of the IEPA and Phillip Guillemette, an Environmental Manager for Mobil Oil Corporation and Willaim Simon, to obtain information relating to current operations and site history. During these discussions Mobil Oil Corporation was given the option of collecting split samples during the site inspection, which they chose to do. Willaim Simon of Mobil Oil Corporation was chosen to collect the split samples during the Site Inspection. A notification letter was sent to Mobil Oil Corporation explaining the nature of the sampling event and when it was going to take place.

2.3 SAMPLING ACTIVITIES

The IEPA sampling team arrived at the site on 9 May, 1995 at 0930 am. The sampling team consisted of Mark Densmore, Ken Corkill, Mark Wagner and Ted Prescott. The sampling team was accompanied by William Simon of Mobil Oil Corporation and Cary Ware, an Environmental Health Toxicologist with the Department of Public Health. The sampling plan involved taking 6 soil and 9 sediment samples, with two of those being offsite background samples. All samples were analyzed for the Target Compound List (TCL) (see Appendix 1). Split samples for Mobil Oil were taken by William Simon. The locations of the samples are shown on the map in Figure 3. The sample locations are described in Table 1. The samples were taken using a combination of previously decontaminated stainless

steel spoons and augers. Analytical results from the sampling event are shown in Table 2, a key sample summary is shown in Table 3. The analytical results for the soil samples are compared to human health based benchmarks from the Superfund Chemical Data Matrix (SCDM). Analytical results for the sediment samples from the river and wetlands were compared to the Ontario Sediment Guide for ecological effects.

The analytical results from the sampling event indicated widespread contamination in the soil of the site with PCB's and PAH's above SCDM benchmarks. The pesticide Aldrin was found in landfarm 5 above SCDM benchmarks. The surface impoundments contained pesticides, PNA's and several tentatively identified compounds. Sediment samples from the Des Plaines River and the wetlands bordering the northeast side of the property contained PCB's and PAH's.

3. SITE SOURCES

3.1 SOURCE DEFINITION

SURFACE IMPOUNDMENTS

IEPA records indicate that seven surface impoundments located in the south-central portion of the Mobil Oil Refinery property were used by Mobil Oil to store sludge before landfarming. The impoundments were dug to a depth of approximately three feet and

lined with lime slurry. IEPA records concerning the remaining impoundments are as follows: A and B were emptied in 1979; C and D emptied in 1980; E and F never contained hazardous waste; G contained leaded tank bottoms, a composite sample taken from impoundment G during the 1984 CERCLA Screening Site Inspection was not hazardous. At the time of the Site Inspection Prioritization Inspection all of the impoundments were backfilled and leveled except for surface impoundments B and C. The area of impoundment B is 110,000 square feet, and the area of impoundment C is 72,000 square feet. A sediment sample from surface impoundment B contained elevated levels of benzo-a-pyrene, and several tentatively identified compounds. A sediment sample from surface impoundment C contained elevated levels of the pesticide Toxaphene. Surface impoundment C also contained 2-methylnaphthalene, phenanthrene, benzo-a-anthracene and chrysene. Several tentatively identified compounds (TIC's) were detected in impoundment C.

Any runoff which would occur from the impoundments B and C should flow into a pond which is located in a topographic depression about 40 feet south from the impoundments.

CONTAMINATED SOIL

Land Treatment Areas

Five land treatment areas were used by Mobil Oil Corporation to dispose of refinery sludge. The land treatment areas are also referred to as soil farms. The total area of the land treatment area is 53 acres. During the Site Investigation two locations

within the land treatment areas were chosen for sampling based upon stressed vegetation. Waste petroleum coke is prevalent in the area. The sample from soil farm 2 contained levels of PCB's (specifically Arochlor 1260) above the level of potential health concern. The sample from soil farm 5 contained several elevated semivolatiles, most notably benzo-a-pyrene which was above levels of potential human health concern. Soil farm 5 also contained the pesticide Aldrin above levels of potential health concern.

Facility Soil

A soil sample and a duplicate were taken in the northern part of the facility, north of the coking plant. The sample contained elevated PNA's and PCB's. Benzo-a-pyrene and PCB's (specifically Arochlor 1260) above levels of potential human health concern. Several tentatively identified compounds were also detected, most notably unknown PNA's.

SECTION 4. MIGRATION PATHWAYS

4.1 GROUNDWATER PATHWAY

A soil-groundwater assessment done for Mobil Chemical Company (located just west of the Mobil Oil Refinery) indicates that the shallow groundwater generally flows toward the DesPlaines River, basically following surface topography. The Des Plaines River would

act as a groundwater flow boundary to the north of the site for the shallow groundwater flow. The shallow groundwater is unconfined and would either tend to flow along the soil/Silurian dolomite bedrock interface or the contact between the Silurian dolomite and the underlying Maquoketa Shale. IEPA records indicate that the shallow groundwater is not used on or around the site location. Deep bedrock groundwater (approximately 900-1600 feet in depth) is the primary source of groundwater in the area. The aquifer of concern is isolated from shallow groundwater by the Maquoketa Shale which is an aquitard. Mobil Oil does have a production well onsite which is not used for drinking. IEPA and Mobil Oil Corporation records indicate that monitoring wells installed near the surface impoundments and land treatment areas showed no record of contamination in the shallow groundwater aquifer. IEPA records show that there is no public water system within 2 miles of the impoundment and landfarming area. The Channahon public water supply has a water well screened at 700 feet deep, located 1.25 miles northwest from the northwestern boundary of the Mobil Oil property. All industries within 1.5 miles of the site draw groundwater from the deep aquifer and according to IEPA records are unaffected by the site. No private residences exist within 1.5 miles from the site. The groundwater pathway was not re-evaluated during the SIP.

4.2 SURFACE WATER PATHWAY

The perennial surface water pathways of concern bordering the Mobil Oil Property are the Despaines River, Grant Creek and Jackson

Creek. The Des Plaines River flows west along part of the northern border of the site. The northeastern side of the property drains east into a wetland area and then ultimately into Jackson Creek, which is a tributary of the Des Plaines River. The southern portion of the property drains into manmade wetland at the southern end of the property and the overflow from it flows west into Grant Creek, a tributary of the Des Plaines River. The targets for the surface water pathway are the Des Plaines River, Jackson Creek and Grant Creek which are all fisheries, and the two wetlands that border the site. There are no drinking water intakes within 15 miles downstream from the site.

Sediment samples were taken from the outfalls at the northern and eastern boundaries of the property and from wetlands in the southern part of the property and just outside the eastern boundary of the site. The sediment sample at the confluence between outfall 004 and the Des Plaines River in the northwest part of the property contained contamination from PCB's (specifically Arochlor-1242, 1254 and 1260) and benzo-a-pyrene. Benzo-a-pyrene and Arochlor 1242 were not detected in the upstream background sample. The benzo-a-pyrene, Arochlor 1254 and 1260 are at concentrations greater than three times background levels and are consistent with contaminated soil found in onsite samples. A sediment sample taken from the wetland located northeast of the site was found to contain Arochlor 1260 and benzo-a-pyrene. Lower levels of Arochlor 1260 were found in the sediment sample taken from the wetland at the southern end of the Mobil Oil property.

The concentrations of contaminants from the sediment samples were compared to the Ontario Aquatic Sediment Quality Guidelines (see Appendix 3.). These sediment guidelines are non-regulatory ecological benchmark values that serve as indicators of potential aquatic impacts. It should be noted that Ontario Sediment benchmarks are only available for a limited number of contaminants and thus all contaminants detected in the samples cannot be compared to these benchmarks. Based upon these benchmarks the Des Plaines River, the wetland along the northeast boundary of the site, and the wetland in the southern part of the site all fall between the lowest effect level and the highest effect level, and would be classified as marginally polluted. The potential effect of this is that sediment use by some benthic organisms might be affected.

4.3 Soil Exposure

Access to the site is limited since the property is fenced and patrolled to keep unauthorized people from entering the premises. The only people likely to come in contact with contaminated soil are the 90 Mobil Oil Refinery workers. PCB contaminated soil was found in the land treatment areas, the soil in the northern part of the site, in the northwestern part of the site at the confluence of outfall 004 and the Des Plaines River, and in the wetland just outside of the eastern border of the site. The benzo-a-pyrene contaminated soil was found in the land treatment areas, in the soil in the northern part of the site, in the northwestern part of

the site at the confluence of outfall 004 and the Des Plaines River, in outfall 006 in the northeastern part of the site and in the wetlands just outside of the site on the eastern border of the property.

4.4 Air Pathway

The surface impoundments B and C are uncovered and there is the potential that volatile gases could be introduced to the atmosphere. There is a potential of particulate hazard from the areas of stressed vegetation in the landfarm areas, however for the most part the landfarm areas are well vegetated. The soil around the refinery facility where soil samples were taken are not well vegetated and the particulate hazard is greater. There are also more workers concentrated in that area. There are no residences within 1.5 miles of the site. The particulate hazard is most likely to affect only the onsite workers.

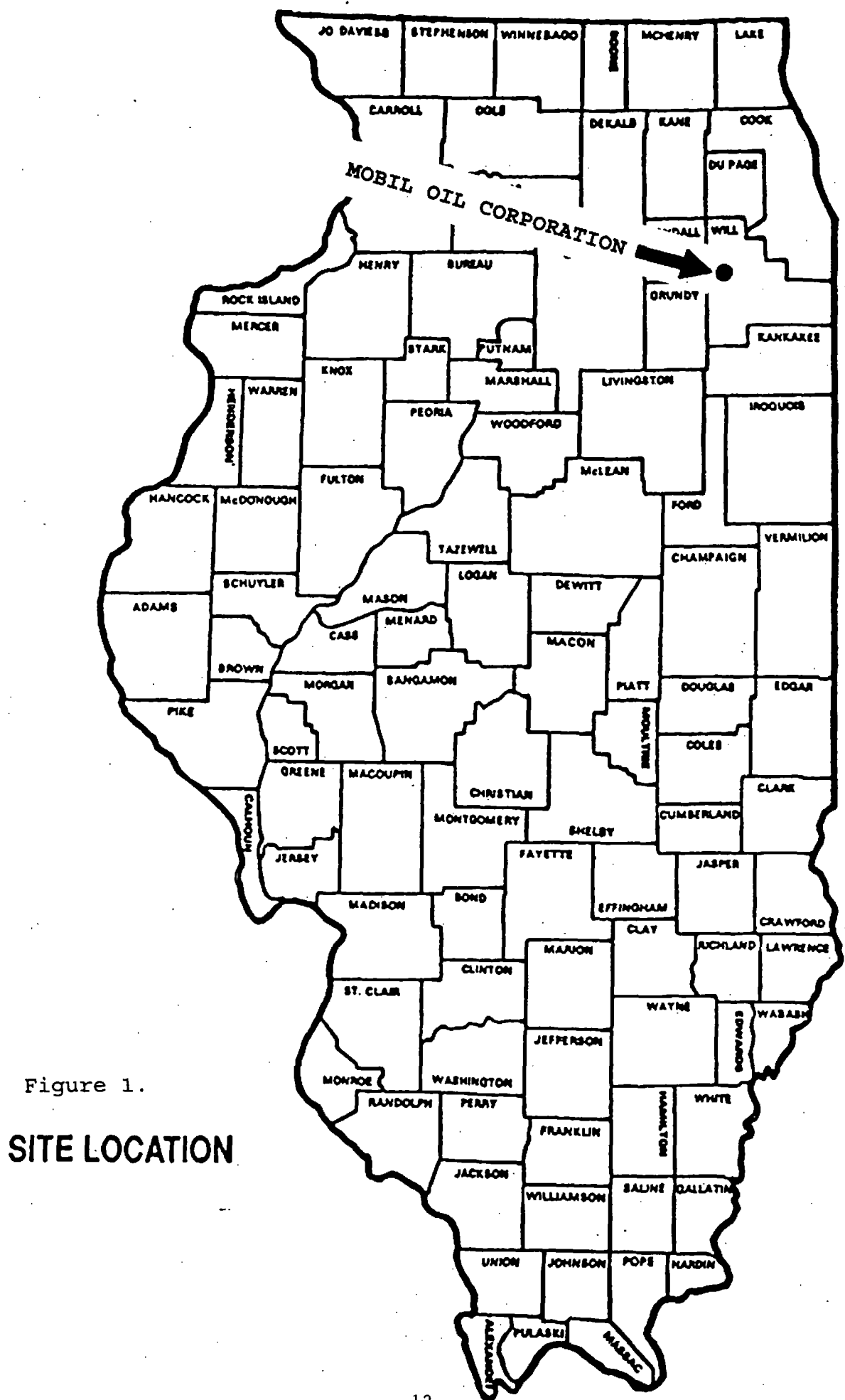


Figure 1.
SITE LOCATION

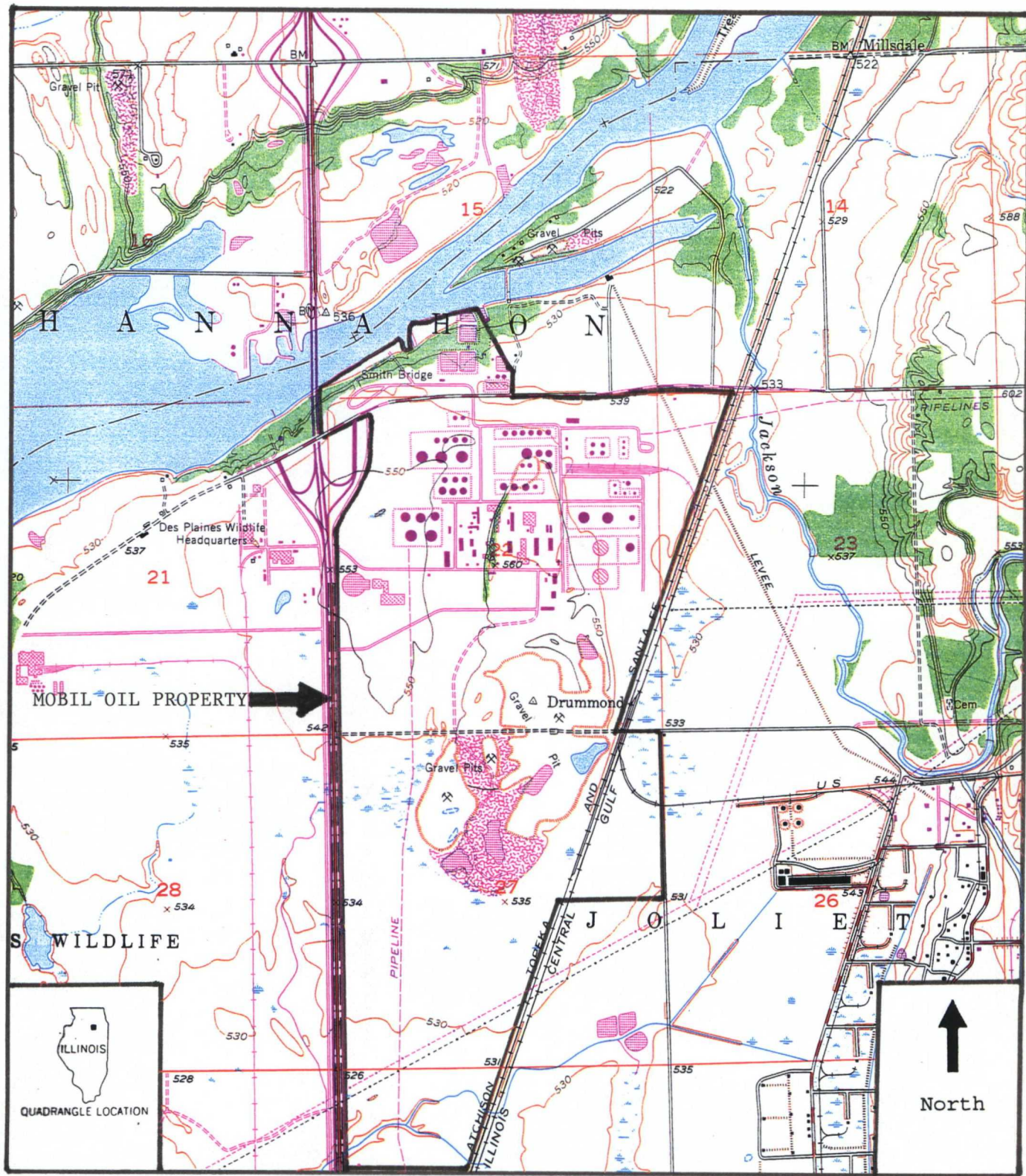
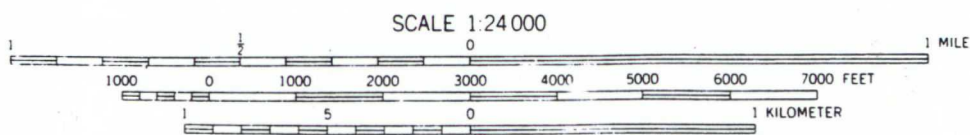


Figure 2. Site topography map.



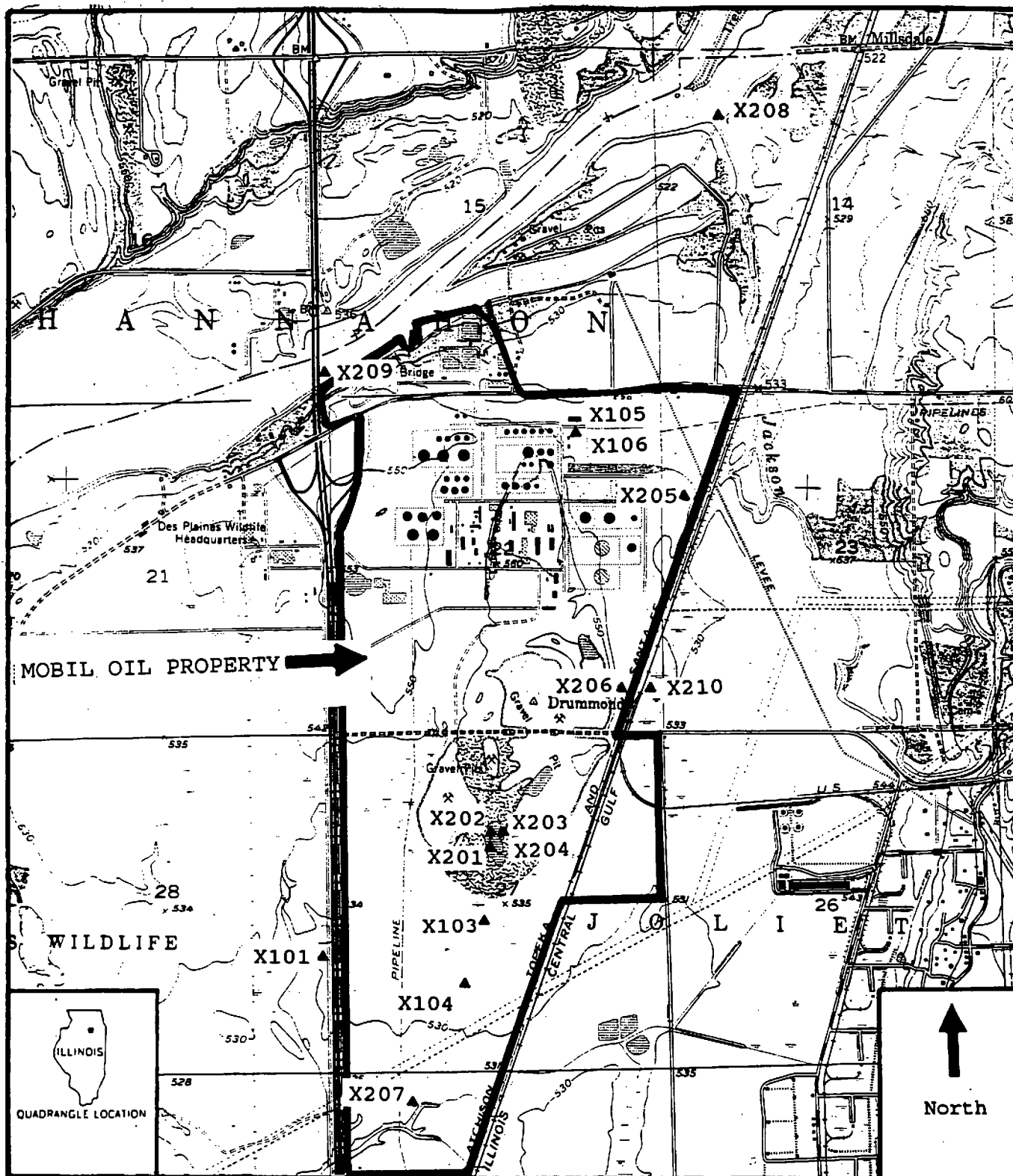
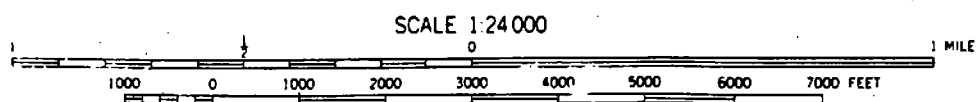


Figure 3. Site map showing sample locations.



▲ Denotes sample location.

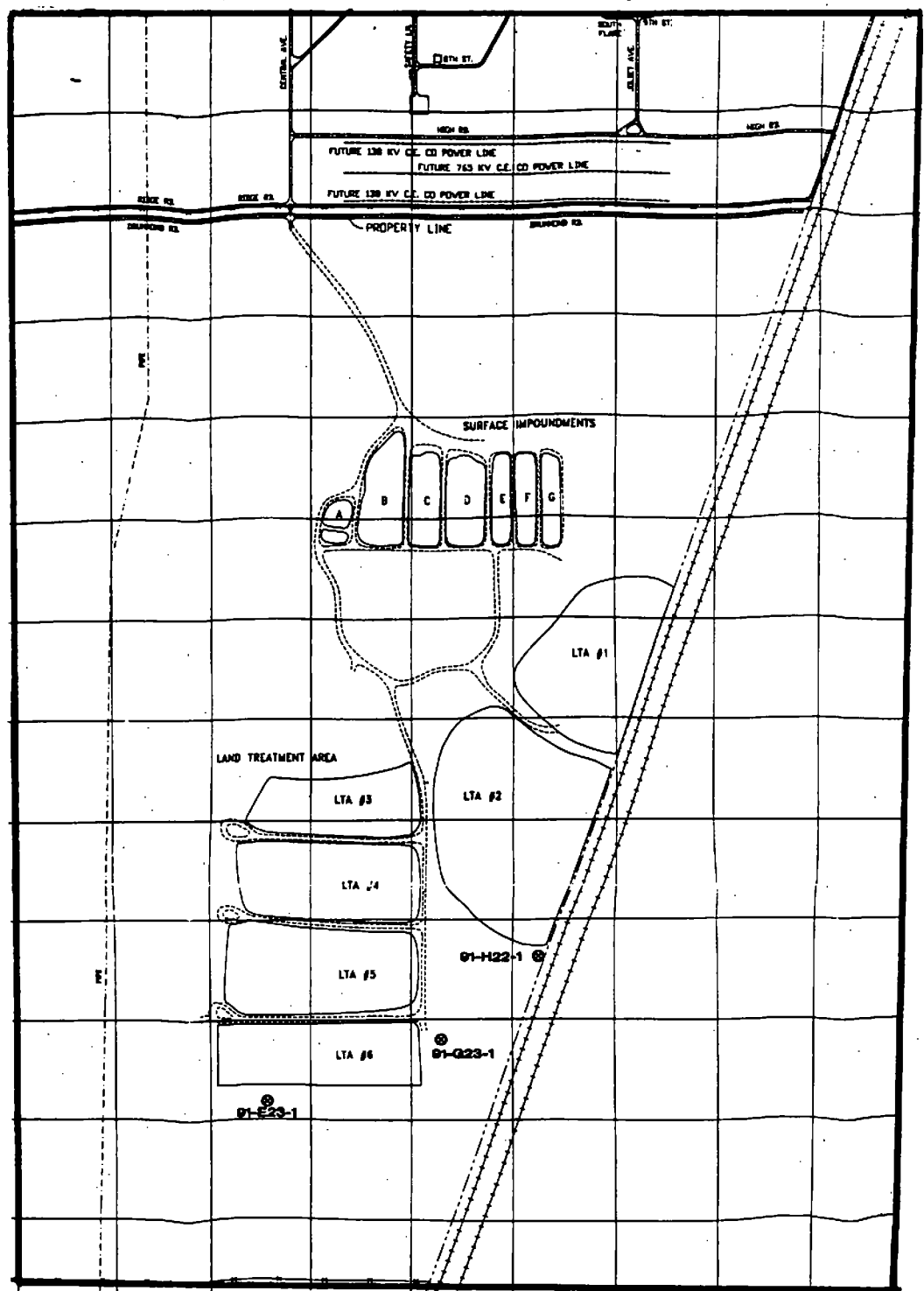


Figure 4. Detail map of surface impoundments and land treatment areas.

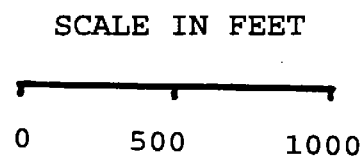


TABLE 1. SAMPLE DESCRIPTIONS

<u>SAMPLE</u>	<u>DEPTH</u>	<u>APPEARANCE</u>	<u>LOCATION</u>
X101	0-6"	Dark silt loam.	Soil backround sample taken west of site. Location 157' west from frontage road, 150' northwest from Wildlife Conservation sign.
X103	0-6"	Dark gray clay rock pieces.	Soil sample from Soil Farm 2 from area of stressed vegetation. Location 158' east from N-S road and 207' north from intersection to south.
X104	0-6"	Brown silt, rock pieces, petroleum coke.	Soil sample from Soil Farm 5 in an area of stressed vegetation. Location 54' north from E-W road and 63' west from circle drive.
X105	0-6"	Black silt, sand, petroleum coke fines.	Soil sample from main part of facility in north part of property. 33' south of 47th St. in line with colvert.
X106	-----	Duplicate of X105	-----
X201	0-6"	Brown silty clay.	Sediment sample taken south of Impoundment B. 42' south of E-W road in line with center of Impoundment B.
X202	0-6"	Dark brown clay, rocks.	Sediment sample from Impoundment B. Location 4' north of south bank, 56' east of west bank.
X203	0-6"	Dark grey sludge.	Sediment sample from Impoundment C. Location on south bank, just north of cement spillway.
X204	-----	Duplicate of X203	-----
X205	0-6"	silty clay.	Sediment sample taken just east of Outfall 6.

<u>SAMPLE</u>	<u>DEPTH</u>	<u>APPEARANCE</u>	<u>LOCATION</u>
X206	0-6"	Orange silty clay, rocks.	Sediment sample from flowing spring. 70' NW from Outfall 7.
X207	0-6"	Dark organic loam.	Backround wetland sample from wetland in south end of property. Located 121' east from wooden post.
X208	0-6"	Grey silty clay.	Backround sample for Des Plaines River. Located just north of the confluence of Jackson Creek and Des Plaines River.
X209	0-6"	Grey sandy silt.	Sediment sample from NW part of property at confluence of Outfall 4 and the Des Plaines River
X210	0-6"	Brown sandy silt, rocks.	Sediment sample from wetland offsite along east boundary of property. Located 37' east of railroad tracks, in line with Outfall 7.

SITE NAME: MOBIL OIL
 ILD NUMBER: 084403199

TABLE 2. SIP KEY SAMPLE SUMMARY

SAMPLING POINT	BENCHMARK	X 101	X 103	X 104	X 105	X 106
PARAMETER	UG/KG	BACKGROUND SOIL	SOIL	SOIL	SOIL	SOIL
ORGANICS units are in ug/kg						
SEMIVOLATILES						
1,2-Dichlorobenzene	52000000.0	460.0 U	—	780.0 J	—	—
Naphthalene	23000000.0	460.0 U	—	1300.0 J	5300.0	5900.0
2-Methylnaphthalene		460.0 U		3900.0 J	3000.0	3400.0
Phenanthrene		460.0 U	—	3900.0	3000.0	3400.0
Fluoranthene		460.0 U	—	—	1600.0 J	2200.0 J
Pyrene	17000000.0	460.0 U	—	18000.0	4300.0	6900.0
Benzo(a)anthracene		460.0 U	—	14000.0	6300.0	11000.0
Chrysene		460.0 U	—	19000.0	8700.0	16000.0
Benzo(b)fluoranthene		460.0 U	—	17000.0	5000.0	6100.0
Benzo(a)pyrene	51.0	460.0 U	—	12000.0	6200.0	7200.0
Benzo(g,h,i)perylene		460.0 U	—	7100.0	—	3200.0
PESTICIDES						
gamma-BHC (Lindane)		2.4 U	—	—	7.6 P	7.7 P
Heptachlor	130.0	2.4 U	—	25.0 P	1.1 JP	0.9 JP
Aldrin	34.0	2.4 U	—	43.0 PD	—	—
Heptachlor epoxide	64.0	2.4 U	0.8 JP	51.0 PD	8.6 P	11.0 P
Endosulfan I	29000.0	2.4 U	—	94.0 PD	—	1.4 JP
Endosulfan II	29000.0	4.6 U	8.6 P	—	31.0 P	34.0
Endosulfan sulfate		0.8 JP	—	180.0 PD	—	—
4,4'-DDT	1700.0	4.6 U	—	—	10.0 P	16.0 P
Endrin Ketone		4.6 U	15	450.0 PD	—	22.0 P
gamma-Chlorodane		2.4 U	—	64.0 P	—	2.8 P
Aroclor-1260	76.0	46.0 U	120.0	—	200.0 P	190.0 P
TENTATIVELY IDENTIFIED COMPOUNDS						
Unknown Alip. Hydrocarbons (total)		12330.0 J	3800.0 J		85200.0 J	66500.0 J
Unknown Alip. Ketone			4120.0 J			
Unknown PNA's (total)				33700.0 J	95600.0 J	70900.0 J
Unknown C3-Substituted Benzene (total)					45000.0 J	48000.0 J
Unknown Dimethyl Naphthalene (total)					13000.0 J	15700.0 J
Unknown Trimethyl Naphthalene (total)						
Unknown Phenol (total)						8800.0 J
INORGANICS units are in mg/kg						
Chromium	2900.0	29.0	105.0	22.8 JC	6.0	6.0
Vanadium		53.3	83.3	82.0 JC	395.0	349.0

TABLE 2. SIP KEY . MPLE SUMMARY

SAMPLING POINT PARAMETER	X201 DRAINAGE SEDIMENT	X202 IMPOUNDMENT SEDIMENT	X203 IMPOUNDMENT SEDIMENT	X204 IMPOUNDMENT SEDIMENT	X205 OUTFALL SEDIMENT	X206 STREAM SEDIMENT	X207 WETLAND SEDIMENT BACKGROUND	X208 RIVER SEDIMENT BACKGROUND	X209 RIVER SEDIMENT	X210 WETLAND SEDIMENT
ORGANICS Units are in ug/Kg										
VOLATILES										
Methylene Chloride	4 J	42.0	--	--	--	--	5.0 J	18.0 J	18.0 J	48.0
Acetone	120.0 J	39.0 J	--	--	--	--	18.0 U	10.0 J	25.0	--
Benzene	--	--	1600.0	320.0 J	--	--	18.0 U	18.0 U	--	--
Chlorobenzene	--	--	5600.0	1200.0 J	--	--	18.0 U	18.0 U	--	--
Ethylbenzene	--	--	21000.0	5400.0 J	--	--	18.0 U	18.0 U	--	--
Xylene(total)	--	--	34000.0	9300.0 J	--	--	18.0 U	18.0 U	--	--
SEMIVOLATILES										
Naphthalene	--	--	87000.0 J	--	130.0 J	--	600.0 U	530.0 U	150.0 J	--
2-Methylnaphthalene	730.0 J	1400.0 J	450000.0 J	400000.0	240.0 J	--	600.0 U	530.0 U	160.0 J	--
Acenaphthylene	--	--	34000.0 J	30000.0 J	--	--	600.0 U	530.0 U	640.0	--
Fluorene	--	--	83000.0 J	51000.0 J	--	--	600.0 U	530.0 U	--	--
Phenanthrene	--	790.0 J	200000.0	180000.0	230.0	--	600.0 U	230.0 J	1700.0	180.0 J
Anthracene	--	--	31000.0 J	--	--	--	600.0 U	530.0 U	1000.0	--
Fluoranthene	--	--	--	--	210.0 J	--	690.0 U	940.0 J	4800.0	520.0 J
Pyrene	--	500.0 J	65000.0 J	57000.0 J	230.0 J	--	600.0 U	1400.0	3600.0	510.0 J
Benzo(a)anthracene	--	--	53000.0 J	49000.0 J	320.0 J	--	600.0 U	660.0	3800.0	470.0 J
Chrysene	--	870.0 J	65000.0 J	60000.0 J	400.0 J	--	600.0 U	850.0	4900.0	480.0 J
bis(2-Ethylhexyl)phthalate	--	--	--	--	190.0 J	--	600.0 U	410.0 J	3100.0	--
Benzo(b)fluoranthene	--	--	--	25000.0 J	380.0 J	--	600.0 U	530.0 U	5300.0	820.0 J
Benzo(k)fluoranthene	--	--	--	--	190.0 J	--	600.0 UJ	530.0 U	4600.0	580.0 J
Benzo-a-pyrene	--	830.0 J	--	--	460.0 J	--	600.0 U	530.0 U	5400.0	690.0
Indeno(1,2,3-cd)pyrene	--	--	--	--	--	--	600.0 U	530.0 U	1700.0	340.0 J
Benzo(g,h,i)perylene	--	--	--	--	--	--	600.0 U	530.0 UJ	1800.0	310.0 J

TABLE 2. SIP KEY SAMPLE SUMMARY

SAMPLING POINT	X201	X202	X203	X204	X205	X206	X207	X208	X209	X210
PARAMETER	DRAINAGE SEDIMENT	IMPOUNDMENT SEDIMENT	IMPOUNDMENT SEDIMENT	IMPOUNDMENT SEDIMENT	OUTFALL SEDIMENT	STREAM SEDIMENT	WETLAND SEDIMENT BACKGROUND	RIVER SEDIMENT BACKGROUND	RIVER SEDIMENT	WETLAND SEDIMENT
ORGANICS Units are in ug/Kg										
PESTICIDES										
beta-BHC	--	--	38.0 P	39.0 P	--	--	3.1 U	2.8 U	14.0 JP	--
delta-BHC	--	--	--	--	--	--	3.1 U	2.8 U	25.0 JP	--
Heptachlor	--	--	23.0	--	--	--	3.1 U	2.8 U	--	0.3 JP
Heptachlor epoxide	--	--	38.0 P	50.0	--	--	3.1 U	2.8 U	--	--
Endosulfan I	--	29.0 P	--	--	0.9 JP	--	0.7 JP	3.3	6.0 JP	--
Dieldrin	3.4 JP	--	21.0 P	28.0 P	1.1 JP	1.0 JP	0.4 JP	4.0 JP	11.0 P	1.5 JP
4,4'-DDE	1.4 JP	--	24.0 JP	27.0 JP	--	--	5.8 U	5.4 U	28.0 P	--
Endrin	--	--	--	--	--	0.4 JP	0.7 J	13.0 P	92.0 D	--
Endosulfan II	--	--	250.0 PD	200.0 PD	--	--	0.8 JP	5.4 U	--	--
4,4'-DDD	17.0 P	2.8 JP	--	64.0 P	--	--	0.8 JP	17.0 P	42.0 JP	3.8 JP
Endosulfan sulfate	--	--	--	--	--	--	5.8 U	5.4 U	43.0 JP	--
Methoxychlor (Mariate)	--	4.1 JP	--	74.0 P	2.1 JP	--	6.3 JP	3.8 JP	--	--
Endrin Ketone	--	--	52.0	73.0	--	0.8 JP	5.8 U	5.4 U	--	18.0 P
Endrin aldehyde	--	--	250.0	230.0	--	--	5.8 U	5.4 U	--	--
alpha-Chlorodane	--	--	12.0	--	--	--	0.4 J	2.8 U	37.0 PD	0.2 JP
gamma-Chlorodane	--	--	19.0	19.0 PD	--	--	3.1 U	3.0 P	15.0 JP	--
Toxaphene	340.0 P	--	3300.0 PD	3300.0 PD	--	--	310.0 U	77.0 JP	--	250.0 J
Aroclor-1242	--	--	--	--	--	--	59.0 U	54.0 U	1500.0 D	--
Aroclor-1254	--	--	--	--	--	--	59.0 U	140.0	840.0 D	--
Aroclor-1260	--	--	--	--	10.0 JP	8.1 JP	37.0 JP	83.0	680.0 D	120.0
TENTATIVELY IDENTIFIED COMPOUNDS										
Unknown Alip. Hydrocarbons (total)	12790.0 J	11500.0 J	200000.0 J	1010000.0 J	5970.0 J	1830.0 J	3700.0 J			10380.0 J
Unknown Alip. Ketone										
Unknown Alip. Acid (total)						890.0 J	800.0 J			970.0 J
Unknown Alip. Alcohol (total)							1000.0 J			
Unknown PNA's (total)		26820.0 J	2480000.0 J	1500000.0 J	1820.0 J			850.0 J	10000.0 J	870.0 J
Unknown C3-Substituted Benzene (total)	630.0 J									
Unknown Dimethyl Naphthalene (total)	2400.0 J		2050000.0 J	1880000.0 J						
Unknown Trimethyl Naphthalene (total)			1430000.0 J	1302000.0 J						
Unknown Phenol (total)									51000.0 J	
INORGANICS Units are in mg/Kg										
Chromium	184.0	86.5	1010.0	1020.0	25.5	18.8	25.3	28.8	25.9	23.0
Manganese	483.0 B	1300.0	300.0	289.0	554.0	544.0	727.0	275.0	487.0	1050.0
Nickel	45.8	17.4 JC	92.3 JC	92.3	18.0 JC	13.4	24.2	30.9	28.1 JC	22.2
Vanadium	27.0	42.8	184.0	185.0	18.4	32.2	39.9	20.3	12.0	31.3
Zinc	202.0	114.0	752.0	771.0	54.7	101.0	96.1	152.0	139.0	814.0
Cyanide	--	--	11.7	11.4	--	--	0.9 U	0.8 U		